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IN THE CLAIMS

Amendments To The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-4. (Canceled)

5. (New) A hydrogen activating apparatus comprising:  
a container for containing a water or a liquid of hydrogen-containing organic compound;  
a first electrode;  
a second electrode; and  
a pulse generator for generating and supplying a pulse electric power between the first electrode and the second electrode, comprising:  
a positive terminal, and  
a negative terminal,

wherein the first electrode and the second electrode are arranged to be submerged in the water or the liquid of hydrogen-containing organic compound,

wherein the first electrode and the second electrode include a semiconductors or semiconductor compounds, and configured to be exchangeably connected to the positive terminal and the negative terminal,

wherein the hydrogen activating apparatus has:

a first state having the first electrode connected to the positive terminal and the second electrode is connected to the negative terminal wherein application of the pulse electric power between the first electrode and the second electrode activates hydrogen atoms contained in the water or the liquid to produce hydrogen gas, and

a second state having the first electrode connected to the negative terminal and the second electrode is connected to the positive terminal, wherein application of the pulse electric power between the first electrode and the second electrode activates hydrogen atoms contained in the water or the liquid to produce hydrogen gas.

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6. (New) The hydrogen activating apparatus according to claim 5, wherein the pulse electric power has a voltage of higher than or equal to 1000 volts (V) and a current of less than or equal to 5 milliamperes (mA).
7. (New) The hydrogen activating apparatus according to claim 5, further comprising a heating device for heating the water or the liquid of hydrogen-containing organic compound.
8. (New) The hydrogen activating apparatus according to claim 5, wherein the semiconductor forming the electrodes comprises at least one element selected from a group consisting of silicon, germanium, gallium, phosphorus, arsenic, cadmium, sulfur, and selenium.
9. (New) The hydrogen activating apparatus according to claim 5, wherein the semiconductor compound forming the electrodes, comprises at least one element selected from a group consisting of silicon, germanium, gallium, phosphorus, arsenic, cadmium, sulfur, and selenium.
10. (New) The hydrogen activating apparatus according to claim 5, wherein shapes of the first and second electrodes are configured to be plates.
11. (New) The hydrogen activating apparatus according to claim 5, wherein shape of the first electrode is configured to be a sleeve.